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PowerTest

Basic Concept

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Start page

The start page of ***PowerTest*** is the place where we can see all test modules and set system setting.

Basic:
Here we have access to many basic test modules. Customer can select one or more modules at the same time and click ‘OK’ button to enter into the test page.

QuickTest(4V,3I)
QuickTest(4V or 6V,6I)
QuickTest(VL-L,3I)
QuickTest(Sequence)
QuickTest(Power)
QuickTest(Z,I Const)
QuickTest(1V,6I)
Time
State Sequence(4V,3I)
State Sequence(4V,6I)
State Sequence(1V,6I)
QuickTest(Z,V Const)
QuickTest(Z,Zs Const)
CB Operate
Ramp(3I)
Ramp(6I)
Harmonic
Non-electricity Check
TransPlay(4V,3I)

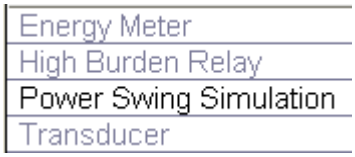
Protection:
Here users can open the Protection modules after authorized by PONOVO.

Distance(Z-Phi)
Distance(R-X)
Differential(3I)
Differential(6I)
Time Inversed Current
Time Inversed Voltage
Directional
Under(Over)_Frequency Relay
Under(Over)_Voltage Relay
U,I,T Relay(AC)
U,I,T Relay(DC)
Auto-Reclosing

Advanced:
Here we can open the Advanced modules after authorized by PONOVO.

Advanced Differential(3I)
Advanced Differential(6I)
Advanced TransPlay(4V,3I)
RX Characteristic Sweep
Synchronizer

Special:
Here user can open the Special modules after authorized by PONOVO.



New Modules:
Here we can open the New modules saved by customer in the place of customers selection. It requires authorization from PONOVO.

Templates
Here we can open the test templates saved by customer in the place of customers selection.

Report
Users can open the saved reports here.

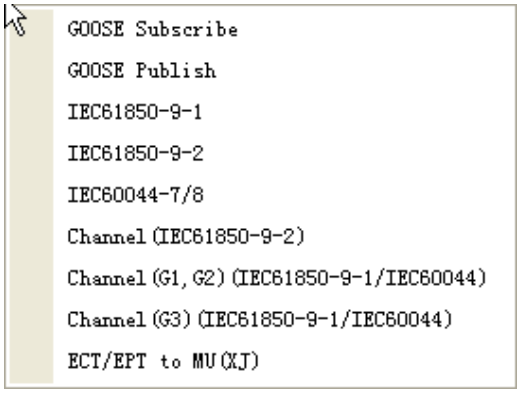
Test Plan
Here users can made test plans or check the previous test plans.

System Set
Here we can set system settings which will be used by all test modules. See ‘System Settings’ in ‘Basic Concept’

Aux. DC
Here we can set the Auxiliary DC for driving the relay which requires DC power supply.

Binary
Here we can set binary input forms (dry contact or threshold and power level)

IEC61850
Here we can set parameters of IEC61850 including:



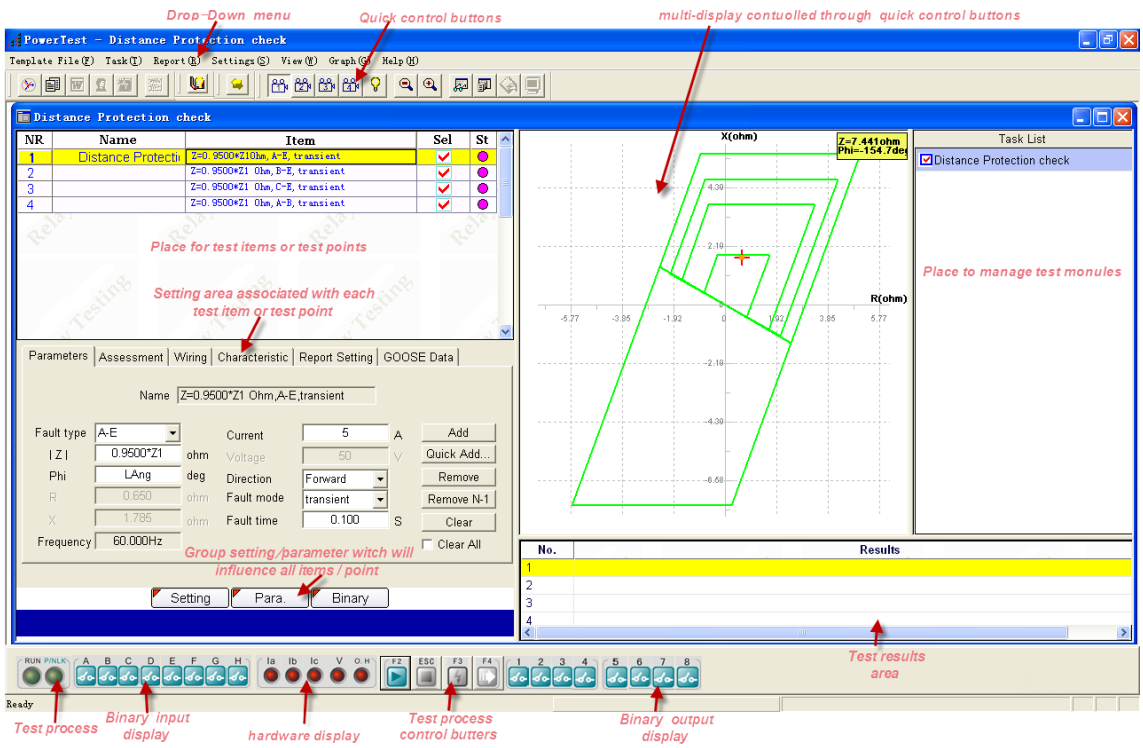
Refer to detailed in IEC61850 User Manual.

License
It is used to check the authorization information of all test templates.

IP Set
When the relay testing system can't be operated online and there is something wrong with IP settings, users can reset IP information. Please refer to the detailed setting methods in hardware user manual of each model.

Typical test page

The typical test page is shown bellow.

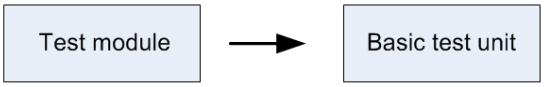

Drop-Down menu
Quick control buttons
multi-display contuolled through quick control buttons
Place for test items or test points
Setting area associated with each test item or test point
Place to manage test monules
Group setting,/parameter witch will influence all items / point
Test results area
Test process
Binary input display
hardware display
Test process control butters
Binary output display

The test page provides the facilities for customer to manage the test process, such as

- Managing test modules
- managing test items and test points
- editing relay settings
- setting test parameters
- displaying relay characteristic
- displaying output vector diagram
- displaying test process
- control test process
- display hardware operation status
- managing test reports
- managing test templates
- managing the output monitoring function
- managing the test process recording function

Test module

Test module is the basic test unit in ***PowerTest***.



We can have access to test modules just from the start page.

For example in ***basic*** we can have the following test modules available.

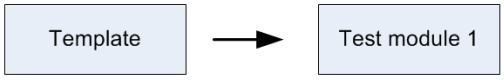
QuickTest(4V,3I)
QuickTest(4V or 6V,6I)
QuickTest(VL-L,3I)
QuickTest(Sequence)
QuickTest(Power)
QuickTest(Z,I Const)
QuickTest(1V,6I)
Time
State Sequence(4V,3I)
State Sequence(4V,6I)
State Sequence(1V,6I)
QuickTest(Z,V Const)
QuickTest(Z,Zs Const)
CB Operate
Ramp(3I)
Ramp(6I)
Harmonic
Non-electricity Check
TransPlay(4V,3I)

We can select one or more test modules at the same time according to our test requirement.

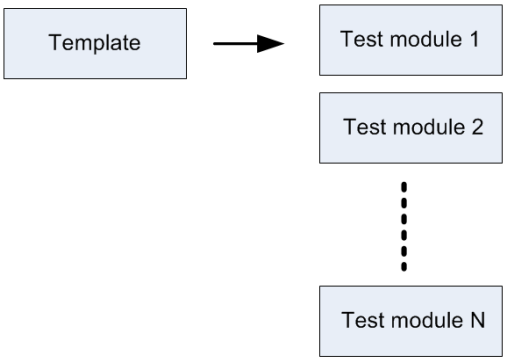
Test template

Test template is composed by one ore test modules.

Example 1: template which contains only one module



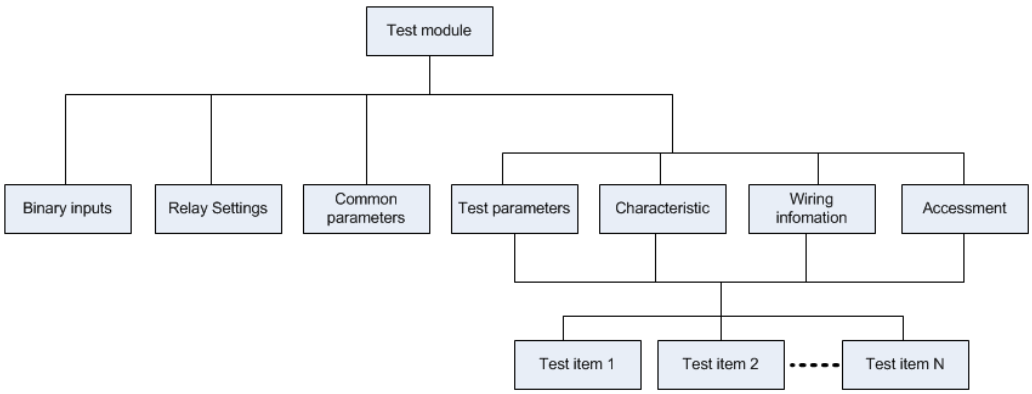
Example 2: template which contains several modules



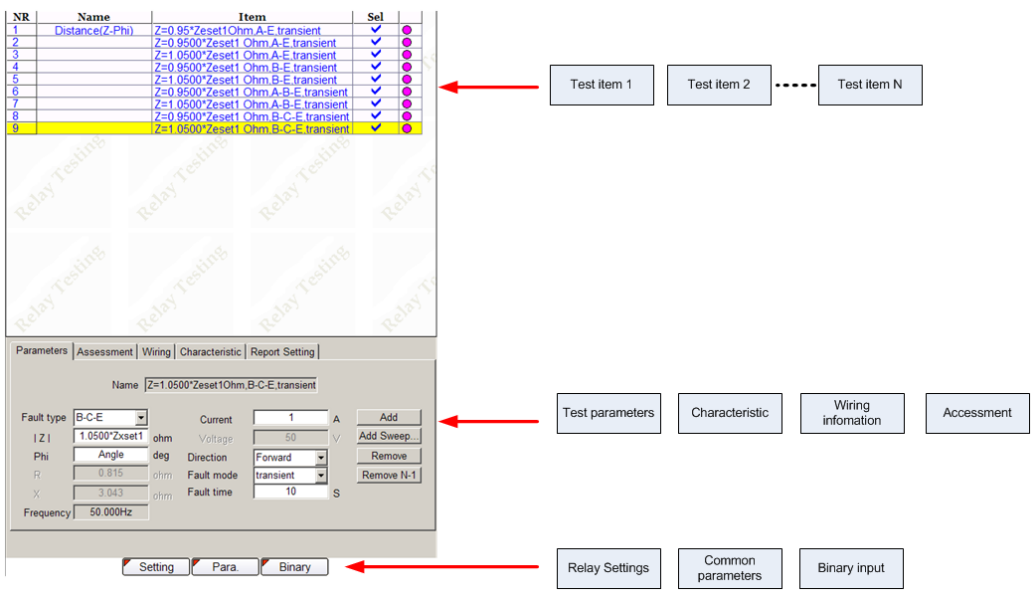
Test template is used to test a complete protective relay system where different relay tests are required.

Test module composition

The typical composition for distance module is shown bellow.



The association of the above diagram components to the software is shown bellow.

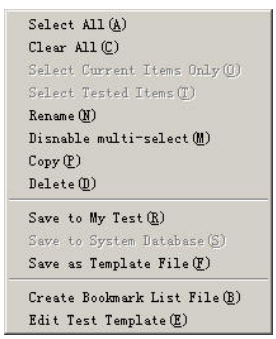


How to generate test template

Step 1
Select test modules to be included in the test template from the start page and enter into the test page. In our example here we are going to generate a test template which contains '***Ramp***' and '***Distance(R,X)***' modules.

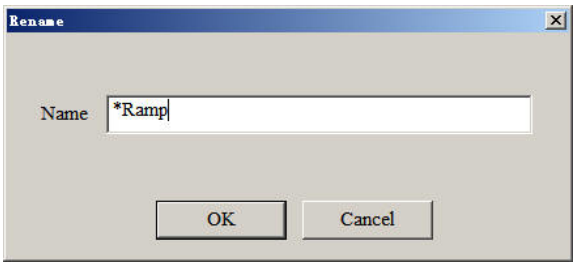
Step 2
In the 'Task List' area of test page right click the mouse button and we see the pop-up selection page

Step 3
Click the '***Disable multi-select***' option to make it active. After this operation we will be able to select more test modules at the same time.



Step 4
Select the two modules

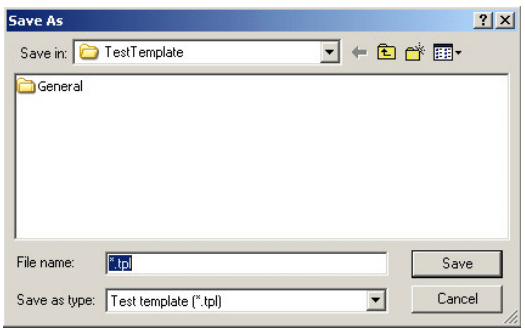
Step 5
We can also change the module name. To do it we can right click the mouse button and select '***Rename***'. Then we see the pop-up dialog box.



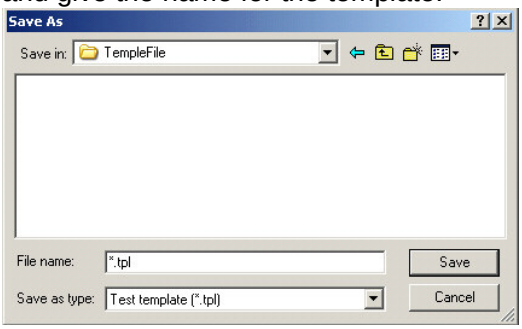
Step 6
Enter the new name for the module.

Step 7
Make relay settings for these two modules accordingly.

Step 8
In the '***Task List***' area right click the mouse button and select '***Save as Template File***' and we will be asked to select the folder where we want to save the template.



Select the folder we want to save the template and give the name for the template.



Open test template

There are three ways to open the test templates.

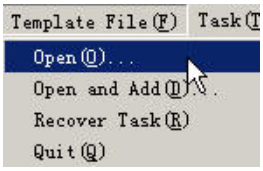
Open template from start page

Click the ***Templates*** button in the start page and select the template file from the folder where the template file is saved. Then we will enter into the test page automatically with test modules containing in this template. The test parameters and relay settings in the saved template will also be uploaded here.

Open template from test page

We can also open the template from the test page.

In the test page drop-down menu select 'Template' and select ***open***. Then we need to select template file from the place where it's saved.



Open template from report

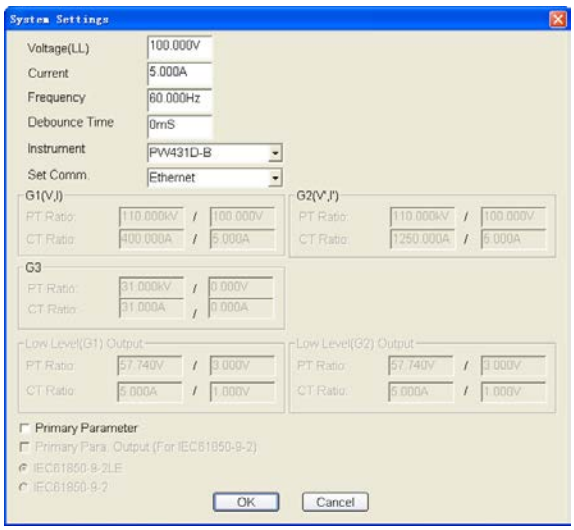
If we have save the test report in ***PowerTest*** format with the extension of ***rpt*** we can also open the template through opening this report in any module.

rpt format test report can be opened in the test module. At the same time the template information contained in the report will also be opened.

System settings

In the start page we can set some basic system settings which will be applicable for all test modules.

Click ***System Set*** to enter into the setting page.



Voltage (LL)

Here we need to give the nominal secondary voltage of PT which is connected to the relay voltage input.

If we know the L-N voltage we can get the L-L voltage with the following calculation.

$$V(LN) = V(LL) / \sqrt{3}$$

Current

Here we need to give the nominal secondary current of CT which is connected to the relay current input.

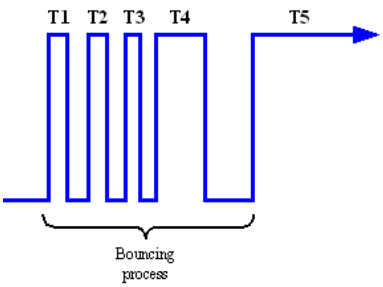
Frequency

Here we need to define the system frequency

Debounce time

This time will be used to filter the bouncing of output contact of the relay under test.

Example:



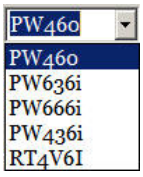
In above example the relay contact is experiencing bouncing process. The duration of T1-T4 are all less than 3ms. So these T1-T4 bouncing will not be sensed by our test software. The T5 sensed by the test software because it's duration is longer than 3ms.

By default we set 3ms here. Customer needs to make necessary modification if this setting can not meet the test requirement.

The setting range is 0-25ms
When test is over we will consider this debounce time in our tripping time calculation So that no extra error will be added to tripping time result.

Instrument

The ***PowerTest*** software can be used by different model of our relay test sets. Before we enter into the test page customer needs to select the model he is going to use



Set Comm.

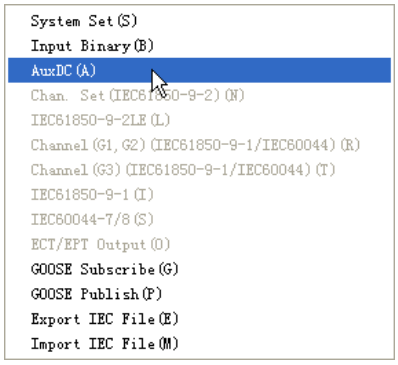
Here we need to define the communication port of the relay test set. By default ***Ethernet*** will be set here.

Aux DC

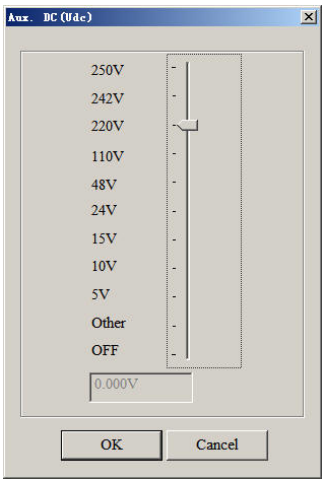
Here we can set the ***Auxiliary DC*** for driving the relay which requires DC power supply.

The auxiliary DC voltage will be generated at the moment we start the test and will remain active when we change from test module to test module.

We can also set the auxiliary DC in the test page by selecting ***AuxDC*** in 'Settings' of drop-down menu

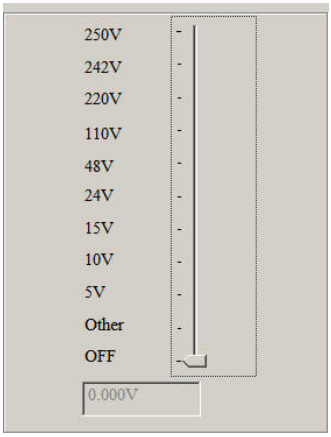


Then we can see the setting page as shown bellow.



Drag the cursor to the setting position and click ***OK*** to confirm the setting.

To stop the auxiliary DC output we need to enter into the above setting page and set drag the cursor to OFF position.

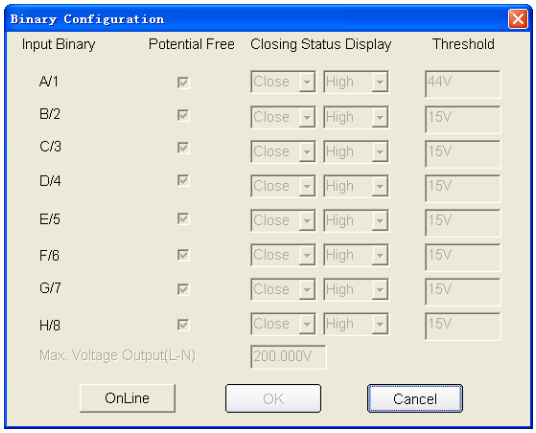


Click ***OK*** button to confirm this operation.

Binary input type

For relay test set with adjustable threshold we need to configure the binary input characteristic and/or threshold here.

Click ***Binary*** to enter into the setting page.



Potential Free

For potential free contact customer needs to select the potential free box for the binary input to be used. In that case the setting for threshold will be prohibited.

Threshold

For potential contact customer needs to set the threshold here.

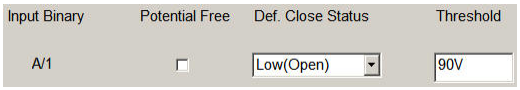
The threshold is the point where potential contact changes from high status to low status or from low status to high status.

Close status

For potential free or potential contact customer can associate its actual status with that to be displayed in the software. For example, we can define the high status of potential contact as the closed status in the software, or vise versa.

Example: setting potential contact

Suppose the potential contact has a threshold of 90V. Bellow 90V the potential contact is to be regarded as closed status in the software. When the contact status changes the voltage applied to the binary input will jump to 220V. We can set any one of the 8 binary inputs. In this example we are going to set binary input 1.



Note: We can increase the threshold setting to avoid possible electromagnetic noise at the site. For example we can set **110V** in this example

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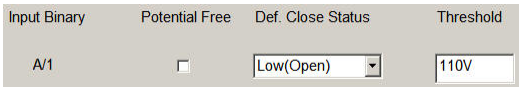


In the example above the low status voltage is 90V, lower than the threshold setting of 110V. When potential status changes the voltage will jump to 220V and this status will be regarded as open status in the software.

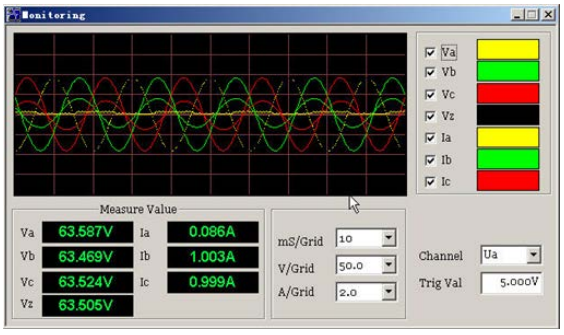
Output monitoring

This function is used to monitor the output waveform and value during the test process

This function is used to monitor the output

Customer can activate this monitoring function by clicking the quick control button

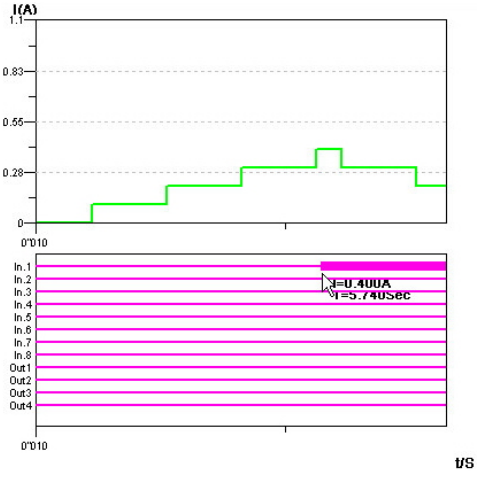
During the test process we can see the output waveform and output value from this monitoring window.



Test process display

For some test modules, such as ***RAMP***, ***QuickTest***, we can view the test process on test page during test process.

Click the control button to switch among different display windows



Here we can also view the binary input/output status during the test process. We can also see the output or tripping values by moving cursor to the position we need.

Test process recording

This function is used to record the test process after test is over. The binary input/output status during the test process is also recorded.

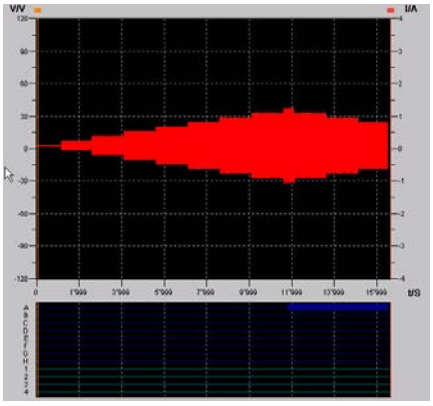
When test is over we can click the recording button to activate the recording operation.

Example: recording of ramping process for pick-up and drop-off test

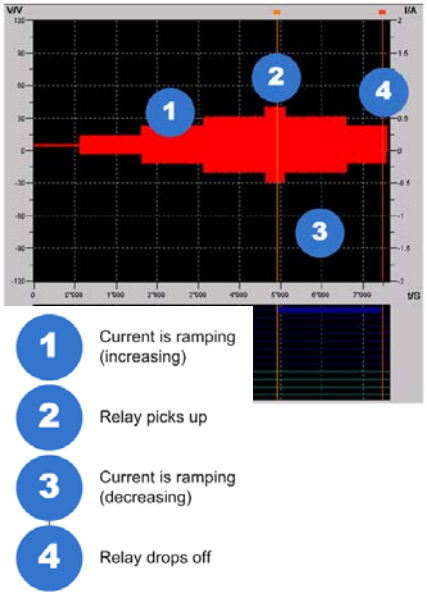
In this example we show a ramping process. The current will increase with set step value and step duration. When relay trips the current will decrease until relay drops.

Note: The recording button will be activated only after test is over

---

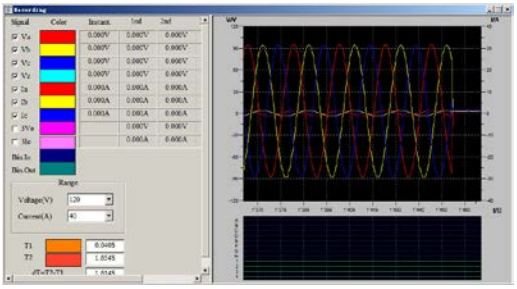


We can enlarge it by using two cursors along time axis.



Recording window

The recording window provides some simple tools to better view the recording display.



Instantaneous and RMS value

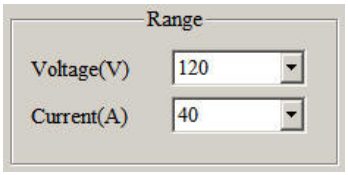
The instantaneous, RMS and harmonic values for voltages and currents at the cursor place can be displayed at the same time.

Signal	Color	Instant.	1nd	2nd	3nd	5nd
Va		93.178V	63.559V	0.014V	0.018V	0.067V
Vb		-54.734V	63.878V	0.030V	0.191V	0.225V
Vc		-31.295V	63.933V	0.018V	0.217V	0.189V
Vz		0.000V	0.000V	0.000V	0.000V	0.000V
Ia		1.505A	1.000A	0.001A	0.001A	0.000A
Ib		-0.775A	0.997A	0.000A	0.007A	0.003A
Ic		0.048A	0.012A	0.002A	0.007A	0.002A
3Vo			1.877V	0.034V	0.413V	0.220V
3Io			2.885A	0.036A	0.426A	0.222A
Bin.In						
Bin.Out						

Note: To view the value display at a cursor position drag the cursor to the position.

Adjust display scale

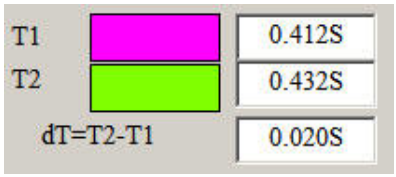
The instantaneous, RMS and harmonic values for voltages and current



Through these settings we can set the maximum range for displaying the voltages and currents for better view.

Time between cursors

The time difference between two cursors and also the absolute time for each cursor position are also be displayed.

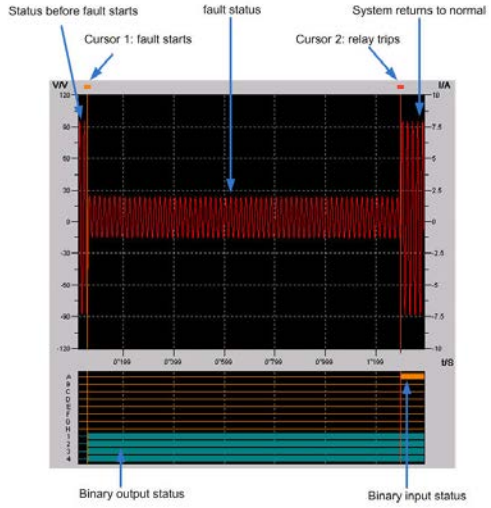


T1: the absolute time counted from the start point to the position of cursor 1

T2: the absolute time counted from the start point to the position of cursor 2

dT: the time difference between T1 and T2

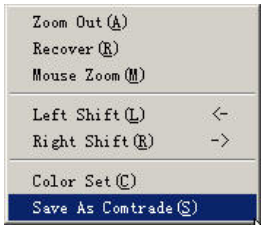
Example: one typical recording display



Export COMTRADE file

The recorded waveform and binary input/output status can be exported to COMTRADE format file.

Move mouse pointer to the waveform display area and right click the mouse button. Then we see the following menu will appear.



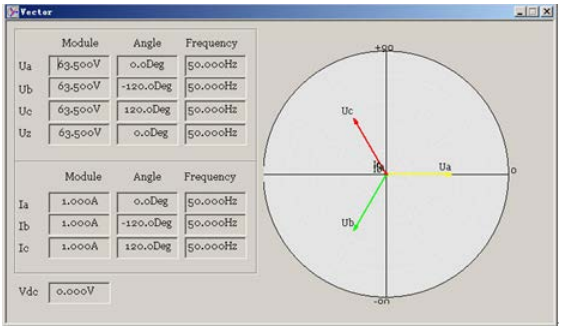
Select ***Save As Comtrade*** to export the current waveform and binary input/output status display as COMTRDE file.

Vector diagram

For a test process we can view the output vector diagram (calculation value).

By click the quick control button we can open this display window.

The vector diagram window is show bellow



Manage test items

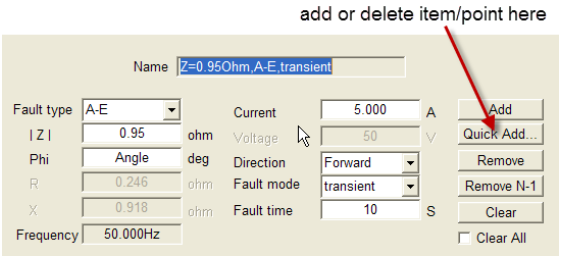
Before starting a test customer needs to manage the test items/points according to test requirement

NR	Name	Item	Sel	St
1	Phase Differential	PickupValue	☑	✚
2		Slope1	☑	✚
3		Slope1	☑	✚
4		Slope2	☑	✚
5		Slope2	☑	✚
6		5nd harmonic restraint	☐	○
7		Trip time test(IR=2.463 In,Id=1.965 In)	☐	○

The green cursor indicates that the current item/point is active.

Add and remove test item/point

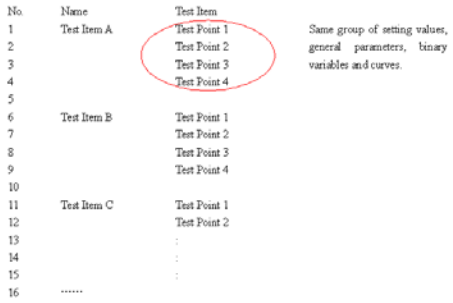
Click ‘Add’ and ‘Remove’ buttons in the parameter setting area to add or delete the test point in a test item.



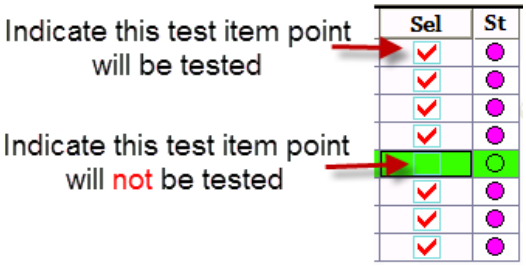
Each test item/point has its own parameter setting screen.

If the newly added test item/point may have different parameters, wiring, report setting, or assessment customer can make setting just in the parameter setting area.

All test items/points share the same group of relay setting values, general parameters, binary input configuration and relay characteristic.

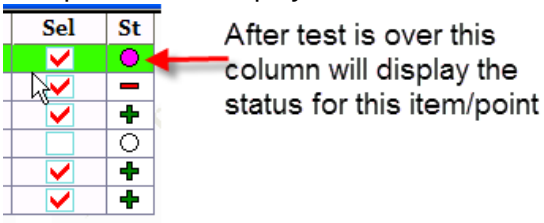


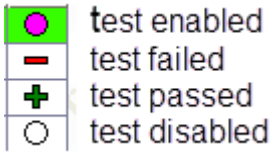
the table ints will be tested. Simply click the items/points in the column of ***Sel*** to enable or disable it.



Status of test item/point

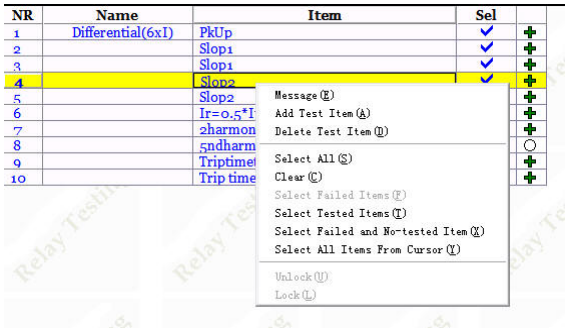
When test is over the status for each tested item/point will be displayed



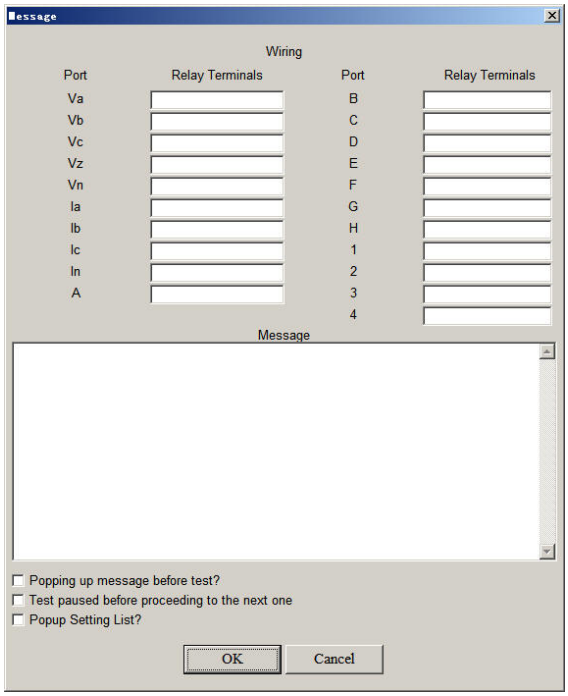


Add wiring and test information

Right click on the item table a pop-up screen will appear and we can see ***Message*** option there.

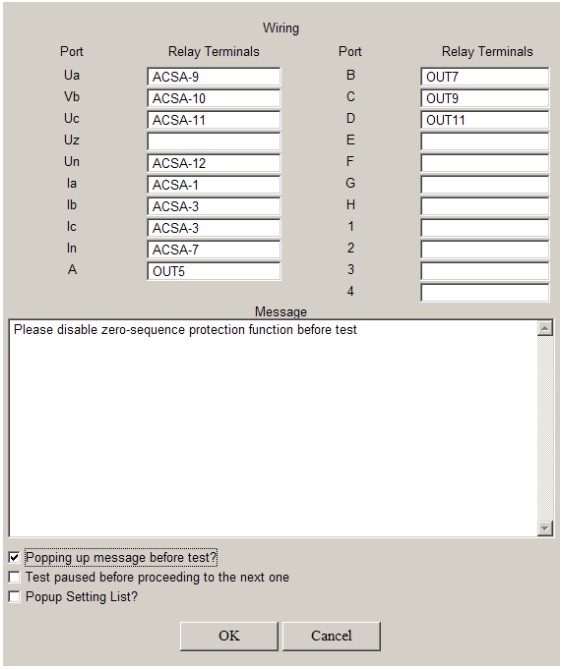


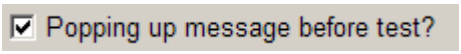
Click ***Message*** the following screen will appear



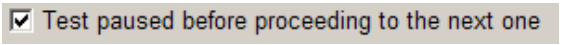
Here we can edit the wiring information for the selected test items/points. In the message box we can also edit necessary notice/instructions.

The following is one example





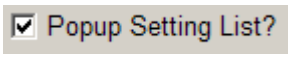
When this is selected the software will compare the message of this test item/point with that of the last test item/point. If there is any difference the current popping box will appear before test starts. And test will start after click the ***OK*** button.



With this selection and after the current test is completed a pop-up dialog box will appear. Customer needs to click the OK button to start the next test.

Note: This facility can be used to manually observe each test item/point

---

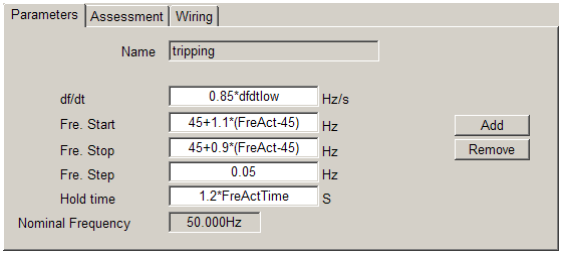


With this selection and when we start test the setting page will pop-up first. And after we click ***OK*** button the test will then start.

Set test item parameters

For each test item/point we can set test parameters in the item parameter setting area.

Example: Parameter setting area for ***Under-frequency*** module



For each test item/point it has its own test ***Parameter, Assessment,*** and ***Wiring***

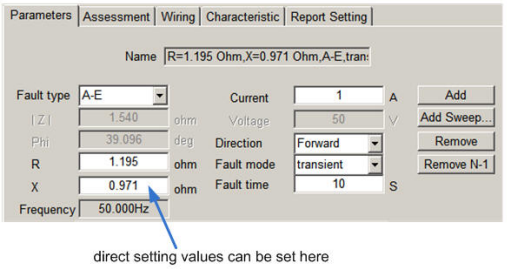
Note: The layout and content of parameter setting area may differ from module to module

---

Set parameter with direct setting value

For test parameters which require setting values we can put in the direct setting values according to our test requirement.

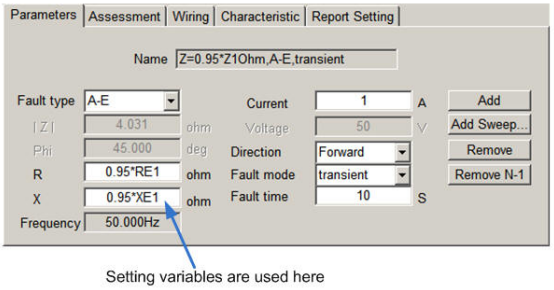
Example: direct setting in distance module



Set test parameters with variables

When one module is opened parameters related to settings will be expressed with variables.

Example: setting with variables in distance module



In the above example the variable RE1 and XE1 represents the relay setting RE1 and XE1.

If RE1 setting is 3 ohm then the expression of 0.95*RE1 is equal 0.95*3=2.85 ohm

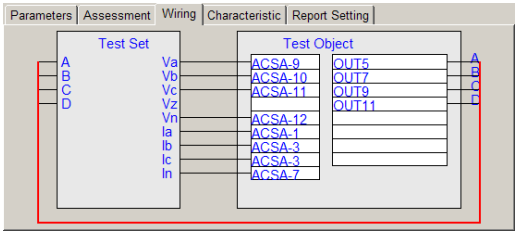
---

Note: For more details about variables please refer to Name for settings and variables on page 17

Wiring diagram

Click ***Wiring*** button we can view the wiring diagram. The wiring diagram is made based on the information we put in ***Message***.

Example: wiring diagram based on the information we put in ***Message*** (see page 15)



Set group settings

Click Setting to enter into the group setting page

For different test modules the group setting page may be different.

Example: group setting page for ***Under-frequency*** module

Name	Value	Variable
Trip freq.	48.500Hz	FreAct
Trip time	1.000S	FreActTime
df/dt Blocking	3.000Hz/s	dfdtlow
Blocking voltage	30.000V	Ulow
Blocking current	1.000A	Ilow
Blocking voltage	Vpp	VSelect

Note: The settings here will be applicable to all test items/points

---

Set group parameters

Click Para. to enter into the group parameter page

For different test modules the group parameter page may be different.

Example: group parameter page for ***Under-frequency*** module

Name	Value	Variable
Input Logic	OR	InputLogic
F Change Mode	Continuous	Mode
dt	0.010Sec	dt

Note: The parameters here will be applicable to all test items/points

---

Set group binary input

For some modules group binary setting is applicable.

In these modules the group binary setting button Binary will be activated

---

Note 1: for more information about binary input configuration please refer to page 21

Note 2: The set binary input configuration will be applicable to all test items/points

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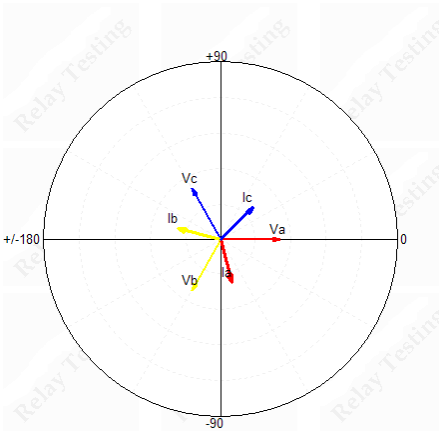
View windows

4 control buttons are provided to switch over among different view windows.

Depending on the module these 4 control buttons may bring different view windows, such as relay characteristic, vector diagram, wiring, relay settings, test process, etc.

Example: a view window which shows the vector diagram and output settings.



57.740V 3.750A

Name	Module	Angle
Va	24.000V	0.0deg
Vb	24.000V	-120.0deg
Vc	24.000V	120.0deg
Vz	0.000V	0.0deg
Ia	1.200A	-75.0deg
Ib	1.200A	-195.0deg
Ic	1.200A	45.0deg
Frequency	50.000Hz	

Example: click we can view the relay settings/parameters

Name	Var	Setting
Trip freq.	FreAct	48.500Hz
Trip time	FreActTime	1.000S
df/dt Blocking	dfdtlow	3.000Hz/s
Blocking voltage	Ulow	30.000V
Blocking current	Ilow	1.000A
Blocking voltage	VSelect	Vpp
Input Logic	InputLogic	OR
F Change Mode	Mode	Continuous
dt	dt	0.010Sec

Name for settings and variables

The settings/parameters in all modules have been assigned to a dedicated name. And for each setting/parameter a dedicated variable name has also been assigned for setting purpose purpose.

By select Setting button we can view the setting names and their variables.

Example: setting names and variables for ***differential*** module

Name	Value	Variable
Tap/Iref(HV)	1.000	Kph
Tap/Iref(MV)	0.932	Kpm
Tap/Iref(LV)	1.100	Kpl
Id>>	10.000A	Isd
Id>	1.000A	Icdqd
Limp Number	2	LineNumber
Ilimp1	2.000A	Ip1
Ilimp2	4.000A	Ip2
Slop1	0.500	Kid1
Slop2	0.700	Kid2
I2f/Idiff	0.110	Kxb
I5f/Idiff	0.110	Kxb5

By select Para. button we can view the parameter names and their variables.

Example: parameter names and variables for ***differential*** module

Name	Value	Variable
Tprefault	0.500S	PreFaultTime
Tfault	0.500S	FaultTime
CB Simu.	No	BCSIMULATION
Topen	100ms	TripTime
Tclose	100ms	CloseTime
Wiring Factor in Tap	No	JXFactor
Tested Winding	Side1-Side3	WindSide
Side 1	wye-winding	WindH
Side 2	wye-winding	WindM
Side 3	wye-winding	WindL
Conversion	No	AngleMode
phase shifting(Clock Notation,tested windings)	12	ConnMode
AxisDef	name	Axis
Inom	5.000A	Inom
Search Mode	dichotomic	SearchMode
CT starpoint	tow.Prot.Obj	IdEqu
Bias. Equ.	IR=max(|I1|,|I2|)	Equation
K1	2	K1
K2	1	K2
Test Phase	A	Phase
Resolution	0.010	Reso

By click button we can view the setting/parameter names and their variables at the same time.

Example: setting/parameter names and variables for differential module

Name	Var	Setting
Tap/Iref(HV)	Kph	1.000
Tap/Iref(MV)	Kpm	0.932
Tap/Iref(LV)	Kpl	1.100
Id>>	Isd	10.000A
Id>	Icdqd	1.000A
Limp Number	LineNumber	2
Ilimp1	Ip1	2.000A
Ilimp2	Ip2	4.000A
Slop1	Kid1	0.500
Slop2	Kid2	0.700
I2f/Idiff	Kxb	0.110
I5f/Idiff	Kxb5	0.110
Tprefault	PreFaultTime	0.500S
Tfault	FaultTime	0.500S
CB Simu.	BCSIMULATION	No
Topen	TripTime	100ms
Tclose	CloseTime	100ms
Wiring Factor in Tap	JXFactor	No
Tested Winding	WindSide	Side1-Side3
Side 1	WindH	wye-winding
Side 2	WindM	wye-winding
Side 3	WindL	wye-winding
Conversion	AngleMode	No
phase shifting(Clock Not...	ConnMode	12
AxisDef	Axis	name
Inom	Inom	5.000A
Search Mode	SearchMode	dichotomic
CT starpoint	IdEqu	tow.Prot.Obj
Bias. Equ.	Equation	IR=max(|I1|,|I2|)
K1	K1	2
K2	K2	1
Test Phase	Phase	A
Resolution	Reso	0.010

Bookmark

PowerTest software provides the facility for advanced report template editing (***optional***).

To edit the report template we need to use the bookmarks associated to settings/test parameters in the software.

Click we can see the bookmarks for the module customer is using.

Example: bookmarks for ***differential*** module

Name	BookMark
Ibias	DIFF6I_1_IBIAS
Idiff	DIFF6I_1_IDIFF
Id>>	DIFF6I_1_ISD
Slop1	DIFF6I_1_KID1
Slop2	DIFF6I_1_KID2
Id	DIFF6I_1_ICDQD

Note: To know more about the optional report editing tool please contact the manufacture

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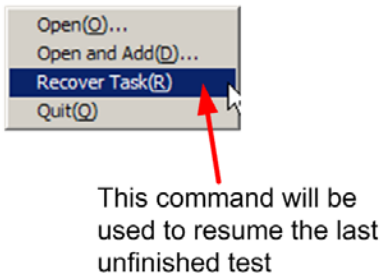
Recover Task

Use the context menu “Resume last test task” on the “Test template” menu to resume last unfinished test plan, so that accidental power-off won’t affect the whole test plan



Test report

There are two type of report formats in ***PowerTest*** software.

Report in rpt format

This type of report does not allow any editing operation. And it contains also the template information of the module used. When we open this report in any module both content of the report and all settings/test parameters we've set for that test will be uploaded.

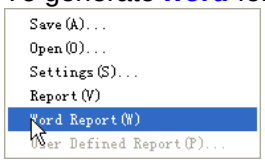
Report in Word format

Work format report is allowed for any editing operation.

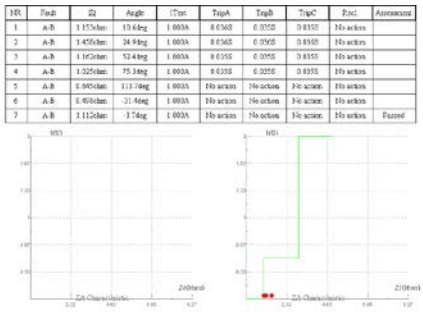
Report generation

To generate ***rpt*** format report click

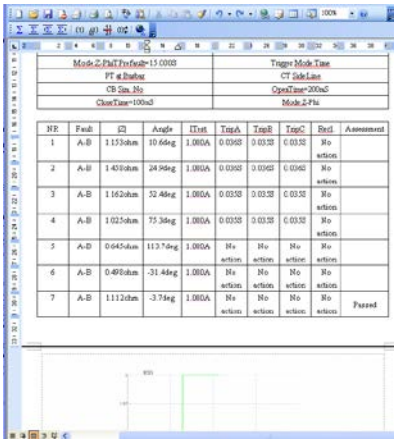
To generate ***word*** format report click



Example: distance test report in ***rpt*** format

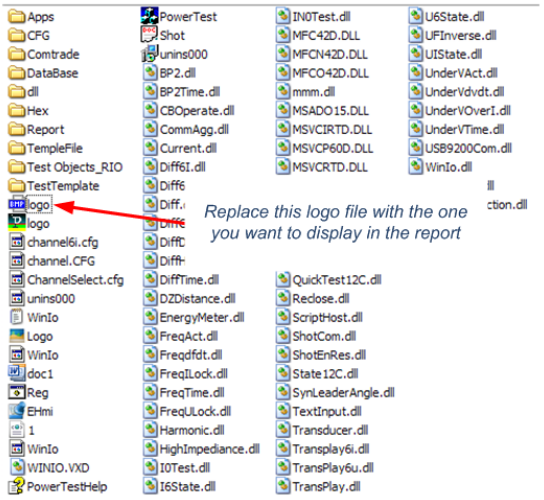


Example: distance test report in ***word*** format



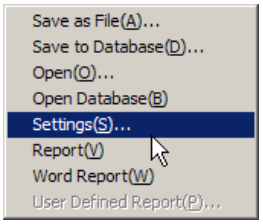
User defined logo in the report

To use his own company logo in the report customer can simply replace the bmp format ***logo*** file in the installation directory of PowerTest with his own logo file with same file format and name.

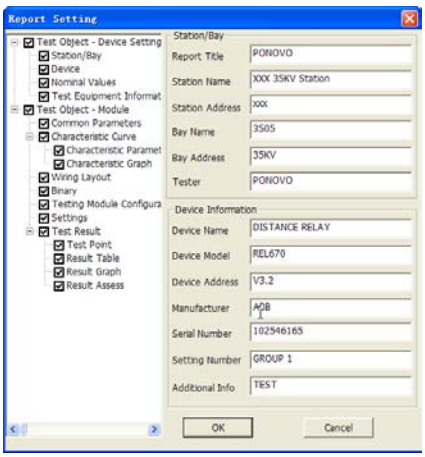


Report head setting

In the drop-down menu we can select Setting to configure what is to be included in the report head.



The follow setting screen will the appear



Select the items we want to include in the report and click ***OK*** to confirm the operation.

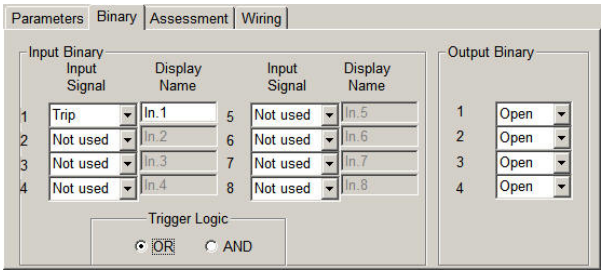
Binary input configuration

The binary inputs will be used to sense the relay operation during the test.

Properly configure the binary input is important for successful relay test.

The selection of binary input type, potential free or potential as while as the setting of threshold for potential contact, can be found on ***page 10***.

In the test module what we do is to configure the logic combination of binary input and decide which one will be used to sense the relay operation.



We can assign binary input with following names.

Not used: *This binary input is not used*
Start
Trip
Trip LA
Trip LB
Trip LC
Sig.1 … Sig.8

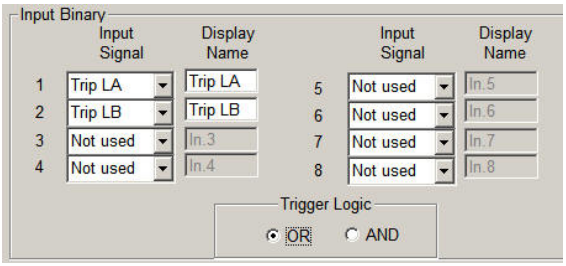
These names will be associated with the report.

We can also modify these names according to our own wish in the column of ***Display Name***

For the selected binary inputs we can configure them as ***OR*** logic or ***AND*** logic.

OR logic

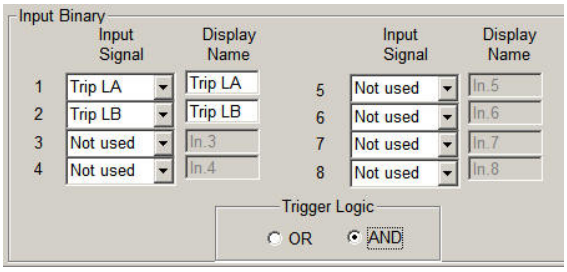
Indicating ***OR*** logic. When any of the selected binary input meets with the trigger condition the current test process will be terminated.



In above example binary 1 and 2 are defined as ***OR*** logic. Any trigger operation of binary 1 or 2 will terminate the current test process.

AND logic

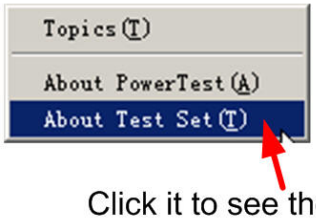
Indicating ***AND*** logic. When all of the selected binary input meets with the trigger condition the current test process will be terminated.



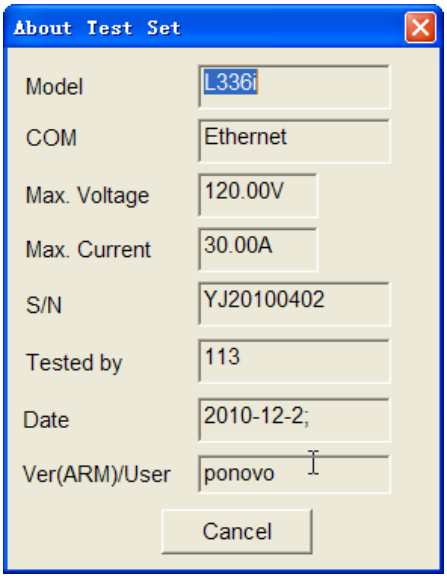
In above example binary 1 and 2 are defined as ***AND*** logic. Only when both of them meet the trigger condition then the current test process will be terminated.

Test equipment information

When the communication between test equipment and external PC is setup we can select from drop-down menu Help the option of About Test Set to get some basic hardware information of test equipment in use.



Click it to see the basic hardware information ssage screen.



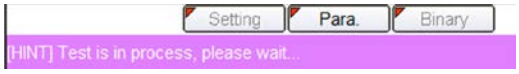
Control test process

We can use the follow 4 quick control buttons to control the test process

	Start the test
	Stop the test
	Used in some modules to switch from one state to the next one
	Pause the test and click again the resume the test

Start the test

After test is started one message will pop-up to indicate the current test status



Stop the test

After test is started the stop button will be activated for stop action.

button is activated

If we press this button we will stop the test and the button will become inactivated.

button becomes inactivated

State control button

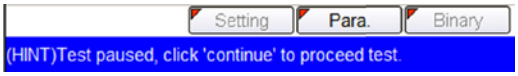
This button is used in some modules where we use this button to manually switch from one state to the next one

Note: More detailed information will be provided on the use of this button in modules where this button is used.

Pause the test

We can temporally stop the test by pressing this pause button. Then the button will have the following look

At the same time a message will pop-up



If we press this button again the test will be resumed

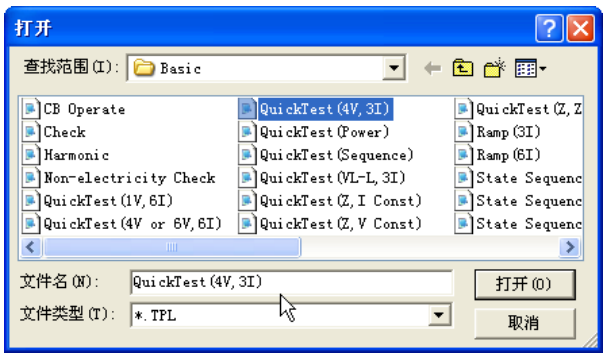
Note: More detailed description on is available in the module where this control button will be used

License

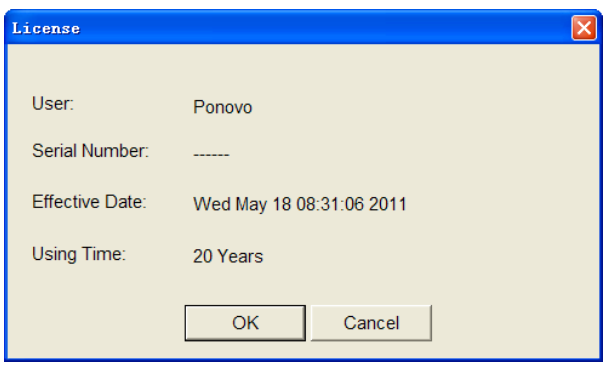
This is used to check information of modules authorization.

Example:

Step1: Press License in the main interface and select the modules.



Step2: Check modules authorization.

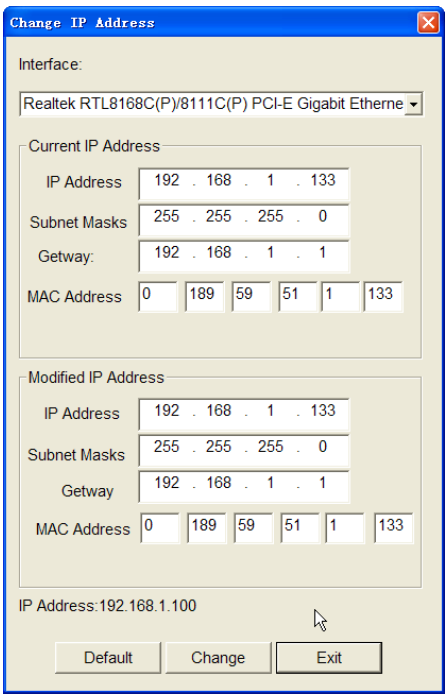


IP Set

This is used to set IP address of relay testing system. The fault IP is 192.168.1.133.

Step1: Press IP Set in the main interface.

Step2: Change address.


Change IP Address
Interface:
Realtek RTL8168C(P)/8111C(P) PCI-E Gigabit Etherne
Current IP Address
IP Address 192 . 168 . 1 . 133
Subnet Masks 255 . 255 . 255 . 0
Getway: 192 . 168 . 1 . 1
MAC Address 0 189 59 51 1 133
Modified IP Address
IP Address 192 . 168 . 1 . 133
Subnet Masks 255 . 255 . 255 . 0
Getway 192 . 168 . 1 . 1
MAC Address 0 189 59 51 1 133
IP Address:192.168.1.100
Default
Change
Exit

Notes: Please don't change the IP address in normal situation. Otherwise, other PC can't connect with the kit.

If it can't connect with other PC, please refer to "IP reset" in hardware user manual

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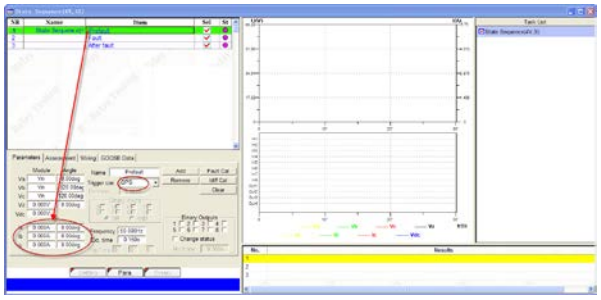
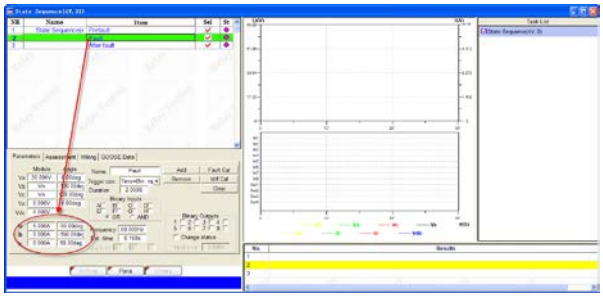
GPS Instruction

GPS：Test state will be switched to the next one if GPS pulse signal is received. GPS signal trigger condition means the end of the current state (after output 50ms) and begin of next state.

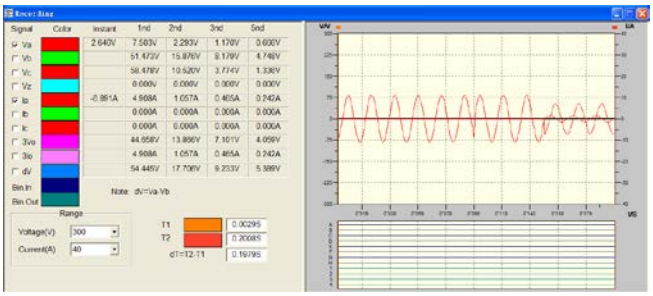
GPS is usually used in the ends of line differential protection to make online test. It requires the current as 0 before synchronization output. If the GPS is set as the first state (before fault), there should not be current output. If the first state has current output, it will make the first state protection trip since the outputs of both sides is not synchronized.

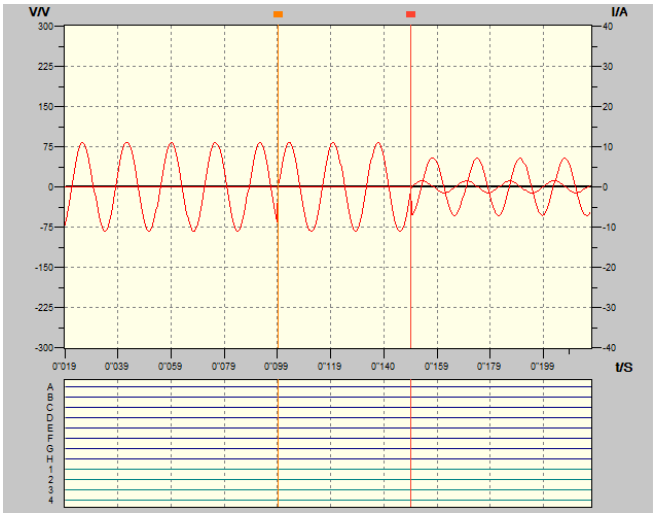
Example:
The line differential protection is made by simulating phase A fault in State Sequence. The following is the parameter setting.





It is waveform output.





From the waveform, there is a 50mS state waveform output after receiving GPS signals. The waveform is synchronized at both ends at this time.